

## The interpretation of null subjects in Italian, Greek and Spanish: A variegated picture

It is usually assumed that all null-subject languages (NSLs) would behave alike regarding the realisation and interpretation of pronominal anaphora. However, recent literature has shown that NSLs show quite an assorted outcome with respect to the use and interpretation of null and overt pronouns. For example, the results of the self-paced reading experiment reported in Filiaci et al. (2013) reveal that Italian and Spanish show a similar pattern for the resolution of null subjects (NSs), whereas they differ in the resolution of overt pronouns: Spanish overt pronouns show a greater tendency to refer to a subject antecedent than Italian overt pronouns. Along the same lines, the production study in Torregrossa et al. (2015) indicates that Greek and Italian NSs differ from each other in their anaphoric possibilities, with Greek NSs referring to object antecedents to a greater extent than Italian NSs. These studies clearly suggest that although “canonical NSLs” share a cluster of syntactic properties (cf., a.o., D’Alessandro 2015), they need to be sorted separately, and their differences need to be explained accordingly. Hence, the question that immediately arises is what can account for such differences.

Elaborating on a recent proposal by Rizzi (2018), which defines prominence of sentence constituents in terms of c-command, we propose that the higher a subject is in the clausal structure, the more prominent it is for anaphora resolution. More specifically, following Roussou & Tsimpli (2006), we claim that in Italian, the subject always occupies a higher syntactic domain than the object, and therefore c-commands more syntactic material and will accordingly be the preferred antecedent of a NS. In contrast, Greek subjects (unlike Italian ones) can be post-verbal (VSO order), which means that they are allowed to occupy the same syntactic domain as objects. Therefore, in Greek, subjects and objects may not differ in the amount of c-commanded material to the same extent as Italian subjects and objects, which means that the syntactic position of subjects and objects is not taken as a relevant cue for prominence in the process of resolution of NSs, which are then associated with a freer choice of reference (i.e., to subject and object antecedents) than in Italian. On this spectrum, Spanish seems to be poles apart from Italian: it allows for VSO order, as Greek, and consequently it can accept both subjects and objects to occur in the same syntactic domain (Leonetti 2012); but Spanish has also Differential Object Marking (DOM), a feature that raises even more the object to a prominent position, namely a sentence internal topic position (Belletti 2004; López 2012). Based on this hypothesis, we should observe that in the three languages (Greek, Italian and Spanish) subjects and objects respectively are ordered in a scale of prominence (in terms of amount of c-commanded material), with subjects being most prominent in Italian (with respect to Greek and Spanish subjects, respectively) and objects most prominent in Spanish (with respect to Greek and Italian, respectively). The different distribution of subjects and objects across the three languages should be reflected in different patterns for resolution of NSs, with NSs exhibiting an increasing tendency to refer to object antecedents, from Italian to Spanish.

To test this hypothesis, we ran an offline interpretation task by means of an online survey, in which participants had to indicate the extent to which they interpreted a NS vs. overt subject pronoun (PRON) as referring to a subject or an object antecedent, based on a 5-point Likert scale. The stimuli (120 target sentences – 30 items x 4 conditions – and 15 fillers) were identical across the three languages. Each sentence consisted of a main clause introducing two same-gender referents, a subject and an object, followed by a subordinate clause containing either a NS or a PRON in subject position. Based on a Latin Square design, we manipulated two factors: Pronoun type (NS vs. PRON) and Reference to the Antecedent (to the subject vs. object of the previous clause). Reference to the Antecedent was manipulated by means of a question asking how likely it was that the action expressed by the verb in the subordinate clause was being performed by the subject or the object of the main clause (see Table 1). 199 monolingual Italian-, Greek- and Spanish-speaking adults (62 Italian; 62 Greek and 75 Spanish) took part in the study<sup>1</sup>.

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<sup>1</sup> Before conducting the study, the participants had to answer questions related to their age, place of origin in Italy, Greece or Spain, level of education and proficiency in a second language. For reasons of space, we will not discuss these data here. However, we found no difference in age and level of education and proficiency in a second language across the three languages. Furthermore, the participants were quite homogeneous with respect to their place of origin.

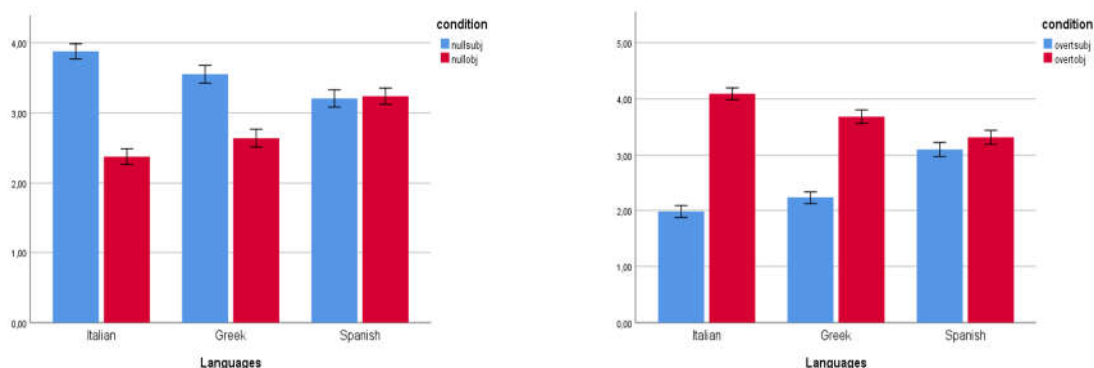
Focusing on NSs, we performed a 2x3 one-way ANOVA with Likert-scores as dependent variable and reference to the antecedent and language as independent ones. The ANOVA analysis revealed a significant effect of reference to the antecedent ( $F(1) = 251.53, p < .001$ ), showing that Likert scores related to NSs referring to an object antecedent were overall lower than the ones associated with NSs referring to a subject antecedent. There was also a significant interaction of reference to the antecedent and language ( $F(2) = 83.28, p < .001$ ). As Figure 1 shows, reference of NSs to object antecedents is accepted to a greater extent in Greek than in Italian, and to a greater extent in Spanish than in Greek. A 2x3 ANOVA was also run for PRONs. We found a significant effect of reference to the antecedent ( $F(1) = 664.50, p < .001$ ) – PRONs tend to refer to the object of the previous clause – language ( $F(2) = 9.6, p < .001$ ) and a significant language x condition interaction ( $F(2) = 134.05, p < .001$ ), showing that PRONs in Spanish are freer to refer to subject or object antecedents than in the other two languages (Figure 2).

As for NSs, the results of this study are consistent with our hypothesis that the extent to which subjects are more prominent than objects varies across the three languages at stake, which depends on whether the syntactic position of subjects or objects serves as a reliable cue in the resolution of NSs: Italian exhibits a strong asymmetry between subjects and objects in terms of amount of c-commanded syntactic material (since subjects and objects always occupy different domains; Roussou & Tsimpli 2006). This asymmetry is less marked in Greek and Spanish, because of the availability of VSO (in both languages) and DOM (in Spanish). As for PRONs, the results are a mirror-image of the one concerning NSs. Differences or similarities between the results of this study and previous ones will be discussed in terms of the different methodologies used across the literature to test anaphora resolution.

Table 1. Stimuli of the experiment in the four different conditions

CONDITION	GREEK	ITALIAN	SPANISH
null_subject/reference to the subject	O giatros pilrose ton architektona, eno <b>pro</b> ekleine to fakelo. [The doctor paid the architect, while <i>pro</i> was closing the folder] Poso pithano einai oti o <b>giatros</b> ekeine to fakelo; [How likely do you think it was the doctor to close the folder?]	Il dottore pagò l'architetto, mentre <b>pro</b> chiudeva la cartella. [The doctor paid the architect, while <i>pro</i> was closing the folder] Quanto probabile pensi che fosse il <b>dottore</b> a chiudere la cartella? [How likely do you think it was the doctor to close the folder?]	El doctor pagó al arquitecto mientras <b>pro</b> cerraba la carpeta. [The doctor paid the architect, while <i>pro</i> was closing the folder] ¿Cómo de probable es que fuera el <b>doctor</b> el que cerraba la carpeta? [How likely do you think it was the doctor to close the folder?]
null_subject/reference to the object	O giatros pilrose ton architektona, eno <b>pro</b> ekleine to fakelo. Poso pithano einai oti o <b>architektonas</b> ekeine to fakelo;	Il dottore pagò l'architetto, mentre <b>pro</b> chiudeva la cartella. Quanto probabile pensi che fosse l' <b>architetto</b> a chiudere la cartella?	El doctor pagó al arquitecto mientras <b>pro</b> cerraba la carpeta. ¿Cómo de probable es que fuera el <b>arquitecto</b> el que cerraba la carpeta?
overt_pronoun/ reference to the subject	O giatros pilrose ton architektona, eno <b>aftos</b> ekleine to fakelo. [The doctor paid the architect, while <i>he</i> was closing the folder] Poso pithano einai oti o <b>giatros</b> ekeine to fakelo;	Il dottore pagò l'architetto, mentre <b>lui</b> chiudeva la cartella. [The doctor paid the architect, while <i>he</i> was closing the folder] Quanto probabile pensi che fosse il <b>dottore</b> a chiudere la cartella?	El doctor pagó al arquitecto mientras <b>el</b> cerraba la carpeta. [The doctor paid the architect, while <i>he</i> was closing the folder] ¿Cómo de probable es que fuera el <b>doctor</b> el que cerraba la carpeta?
overt_pronoun/reference to the object	O giatros pilrose ton architektona, eno <b>aftos</b> ekleine to fakelo. [The doctor paid the architect, while <i>he</i> was closing the folder] Poso pithano einai oti o <b>architektonas</b> ekeine to fakelo;	Il dottore pagò l'architetto, mentre <b>lui</b> chiudeva la cartella. [Quanto probabile pensi che fosse l' <b>architetto</b> a chiudere la cartella?	El doctor pagó al arquitecto mientras <b>el</b> cerraba la carpeta. [The doctor paid the architect, while <i>he</i> was closing the folder] ¿Cómo de probable es que fuera el <b>arquitecto</b> el que cerraba la carpeta?

Figures 1 and 2: Likert scores associated with null subjects (Figure 1) and overt pronouns (Figure 2) as referring back to a subject or to an object antecedent across the three languages.



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